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Bees of the Genus Nomada From California

T. D. A. Cockerell

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NATURAL SCIENCES OF PHILADELPHIA.

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BEES OF THE GENUS NOMADA FROM CALIFORNIA.

BY T. D. A. COCKERELL.

TABLE OF SPECIES.

Males.

- Legs black and yellow; abdomen yellow-banded. 1.
Legs red or reddish, or black and red; apex of abdomen usually emar-
ginate, 7.
1. Apex of abdomen emarginate, 2.
Apex of abdomen entire; large species, 4.
2. Size large, over 11 mm. long, *excurrens*, Ckll.
Size smaller, hardly or under 9 mm., 3.
3. Lateral face-marks narrow, gradually tapering to a point; a yellow
spot at top of eye, *decompunctata*, Ckll.
Lateral face-marks ending abruptly at level of antennæ; no yellow
spot at top of eye, *sanctæcrucis*, Ckll.
Lateral face-marks obliquely cut off above, with a projection point-
ing toward antennæ, *subsimilis*, Ckll.
4. Scutellum black; anterior femora expanded into a large flat lamina,
hesperia, Ckll.
Scutellum largely yellow; anterior femora ordinary, 5.
5. Lateral face-marks obliquely truncate above; a large black area
between them and supraclypeal mark, . . . *edwardsii*, Cresson.
Lateral face-marks semilunar; a narrower black area between them
and supraclypeal mark, 6.
6. Smaller, hind femora entirely black behind,
edwardsii australior, Ckll.
Larger, hind femora yellow at apex behind, . . . *hemphilli*, Ckll.
7. Tegulæ yellow; scutellum largely yellow; scape swollen, yellow in
front; joint 3 much shorter than 4, *pascoensis*, Ckll.
Tegulæ not or hardly yellow (dull yellow in *coquilletti*); scutellum
usually black, 8.
8. Abdomen red or reddish, with lateral yellow spots, but no bands;
apex emarginate; scutellum black; mandibles simple, . . . 9.
Abdomen more or less banded, 11.
9. Larger; first abdominal segment black only at extreme base; abdo-
men bright red, *subvicinalis*, Ckll.
Smaller; more than basal half of first abdominal segment black;
abdomen dull colored, 10.
10. Second submarginal cell nearly square, third narrowed almost to a
point, *bifurcata*, Ckll.
Second submarginal cell high and narrow, third about as broad
above as second, *oregonica*, Ckll.

Note: different article by Cockerell beg. p. 580 -
needs filed individually

11. Larger; second submarginal cell very broad below, and narrowed almost to a point above, so that the lower inner angle is very acute; tegulae dull yellow, *coquilletti*, Ckll.
Smaller; second submarginal cell ordinary; basal nervure meeting transverso-medial, or slightly basad of it, 12.
12. First abdominal segment dark brown above, with a few light dots; apex entire; scape entirely dark, *subgracilis*, Ckll.
First abdominal segment with a distinct light (yellow or reddish) band, 13.
13. Abdominal bands (except first) continuously light yellow; scape yellow in front; apex of abdomen emarginate, *subangusta*, Ckll.
Abdominal bands ferruginous centrally on middle segments, yellow laterally; scape yellow in front, *rhodosoma*, Ckll. (and other males?).

Females.

- Large species with yellow-banded abdomen, and bright ferruginous hair on thorax, *rhodotricha*, Ckll.
- Not so colored, and usually much smaller, 1.
1. Abdomen black, with continuous light bands on the first two segments at least, or the black reduced to bands; a light spot before each upper corner of scutellum, 2.
Abdomen red, without entire bands on first two segments, if any, 4.
 2. Mesothorax partly red; scutellum red; abdominal bands white, *crotchii nigrior*, Ckll.
Mesothorax black, 3.
 3. Larger; metathorax with large light patches, *ashmeadi*, Ckll.
Smaller; metathorax without light patches, *formula*, Viereck.
 4. Scutellum black, size small, 5.
Scutellum red, size mostly larger, 6.
 5. Basal nervure ending a little before transverso-medial, almost joining it; size a little larger; abdomen with interrupted yellowish-white bands, those on segments 3 and 4 deeply notched in front, *marginella*, Ckll.
Basal nervure ending a little beyond transverso-medial; abdomen red without light bands, except two whitish spots or a band on fifth segment; apical part of abdomen suffused with black, *elegantula*, Ckll.
 6. Abdomen with large yellowish-white markings, pointed mesad on segments 1 to 3, forming entire bands on 4 and 5, *davidsoni*, Ckll.
Abdomen without such markings; basal nervure ending basad of transverso-medial, or rarely joining it, 7.
 7. Base of first abdominal segment black right across; abdomen with a purplish luster; segments 2 to 5 with lateral cream-colored spots, *angelarum*, Ckll.
Base of first abdominal segment not black right across, or without black, 8.

8. First abdominal segment black in middle; abdomen without light bands,
- First abdominal segment black,
9. Face and front with a few light dots; the antennae,
Front with a great many light dots,
10. Third antennal joint black,
Third antennal joint black,
11. Abdomen with small light spots; submarginal cell black,
Abdomen without light spots,
12. Length about 10 mm.
Length 8 mm. or less,
13. Scape with conspicuous black stripe,
Scape without such stripe,
14. Length at least 10 mm.; hind femora with a median black line,
Length 8 to nearly 10 mm.; a median black line,
15. Hind femora with a red spot in front,
Hind femora red in front of middle,

Nomada (Holonomada) henningsi

♂.—Length 12–13 mm. and *N. edwardsii*, resemble (of red and yellow) legs on the metathorax. Lateral face-marks broad; the supraclipeal markings large and entire; abdomen with less black; segments not or hardly present at summits of segments with less black, the apical patch above, hind femora

y broad below, and narrowed
the lower inner angle is very
binary; basal nervure meeting
of it, 12.
above, with a few light dots;
inset light (yellow or reddish)
continuously light yellow; scape
marginate, *subangusta*, Ckll.
on middle segments, yellow
na, Ckll. (and other males?).

men, and bright ferruginous
rhodotricha, Ckll.
bands on the first two seg-
to bands; a light spot before
first two segments, if any, 4.
abdominal bands white,
crotchii nigrior, Ckll.
dches, 3.
dches, 4.
dches, 5.
dches, 6.
transverso-medial, almost join-
with interrupted yellowish-
4 deeply notched in front,
marginella, Ckll.
transverso-medial; abdomen
whitish spots or a band on
suffused with black,
elegantula, Ckll.
markings, pointed mesad on
on 4 and 5,
davidsoni, Ckll.
nervure ending basad of
light across; abdomen with
with lateral cream-colored
angelarum, Ckll.
black right across, or without
8.

8. First abdominal segment with a large black triangular mark in the middle; abdomen without light spots; mandibles simple, *tintinnabulum*, Ckll.
- First abdominal segment not so marked. 9.
9. Face and front without black; at most a faint blackish stain above the antennæ, 10.
- Front with a great deal of black; mesothorax with a median black band, 14.
10. Third antennal joint hardly half length of fourth; anterior coxæ simple, *crythræa*, D. T.
- Third antennal joint over half length of fourth, 11.
11. Abdomen with small lateral cream-colored spots; second and third submarginal cells much narrowed above, *ultimella*, Ckll.
- Abdomen without such spots; second submarginal cell broader above, 12.
12. Length about 10 mm.; hind femora with a black stripe behind, *rubrica*, Prov.
- Length 8 mm. or less; hind femora with at most a black suffusion, 13.
13. Scape with conspicuous long dark hairs; mesothorax with a median black stripe, *californiæ*, Ckll.
- Scape without such hairs; mesothorax without a median black stripe, *rhodosoma*, Ckll.
14. Length at least 10 mm.; metathorax black with two red spots; hind femora with no black stripe behind, *excellens*, Ckll.
- Length 8 to nearly 9 mm.; metathorax, seen from above, red with a median black band, 15.
15. Hind femora with much black behind; scape with dark hairs; a red spot in front of middle ocellus, *latifrons*, Ckll.
- Hind femora red behind; scape without dark hairs; no red spot in front of middle ocellus, *atrofrontata*, Ckll.

DESCRIPTIONS AND NOTES.

Nomada (*Holonomada*) *hemphilli*, sp. n.

♂.—Length 12–13 mm.; black and yellow. Allied to *N. superba* and *N. edwardsii*, resembling the latter by the black and yellow (instead of red and yellow) legs, and the former by the absence of yellow spots on the metathorax. It differs from *N. edwardsii* also as follows: Lateral face-marks broader above, with much black between them and the supraclypeal mark; flagellum paler beneath; yellow patch on scutellum large and entire (in *edwardsii* divided into two spots or patches); abdomen with less black above, the bands on second and third segments not or hardly contracted in the middle; a minute yellow spot present at summits of eyes; legs with a more orange-yellow color, and with less black, the anterior and middle femora yellow with a black patch above, hind femora black above except apically, anterior and

middle tibia wholly yellow, posterior tibiae yellow with a small black stripe behind, all the tarsi yellow. The second and third submarginal cells are considerably contracted above, and the basal nervure ends only slightly basad of the transverso-medial. The postscutellum has a short yellow stripe.

Hab.—Three males labelled "So. Cal." (Coll. Acad. Nat. Sci. Phil.). Named after Mr. Hemphill, the well-known naturalist of San Diego, Cal.

Nomada (Holonomada) excurrens, sp. n.

♂.—Length about 12 mm.; black and yellow. Similar to *N. hemphilli*, except that the apical plate of the abdomen is broader and strongly notched (in *hemphilli* it is quite entire), and the transverso-medial nervure is strongly oblique (only slightly so in *hemphilli*). The hind tibiae are entirely yellow, without the black stripe seen in *hemphilli*.

Hab.—"So. Cal.," one (Coll. Acad. Nat. Sci. Phila.). This is so close to *N. hemphilli* that it may prove to be only a variety; yet it has characters which would exclude it from *Holonomada*, as that group is defined by Robertson.

Nomada (Holonomada) edwardsii, Cresson.

Hab.—Santa Clara county, Cal. (Coquillett). In Coll. U. S. Nat. Museum.

Nomada (Holonomada) edwardsii var. *australior*, v. nov.

♂.—Length 11 mm.; black and yellow. Differs from *edwardsii* by its smaller size; supraclypeal mark larger (broader than long); lateral face-marks convex on the inner side and pointed above (concave on inner side above clypeus, and obliquely truncate above, in *edwardsii*); third antennal joint shorter, and paler beneath; ventral surface of abdomen wholly yellow beyond the second segment. The apical plate is entire, and the metathorax has a pair of yellow spots. From *N. citrina* it differs thus: Posterior orbits only very narrowly yellow, and that little more than half-way up; no yellow spot below middle ocellus; flagellum black above, dull red beneath; third antennal joint a little longer than fourth, the two together a little shorter than scape, etc. The hind femora are practically all black behind, and all the tibiae have much black behind.

Hab.—Los Angeles county, Cal. (Coquillett). In Coll. U. S. Nat. Museum. Perhaps a distinct species.

Nomada (Holonomada) rhodotricha, sp. n.

♀.—Length about 13 mm., build of *N. superba*; black and red, abdomen with broad chrome-yellow or orange bands. Head and

thorax very densely pubescent; face broad; middle ocellus black; supraclypeal mark and lateral face-marks about level with end of notched, thence continuing a broad postorbital gellum dusky above; upper margin of prothoracic scutellum, postscutellum and basal enclosure congregate and nearly all of hind tarsi long and broad dark brown, stigma contracted above; basal nervure medial, the latter very as in *N. superba*, but without black; ventral

Hab.—"So. Cal.," for distinct and beautiful species.

Nomada (Holonomada) hesper

♂.—Length about 10 mm.; thickly clothed with white beneath, dense and silvery below; basal half of face-marks (irregularly ending abruptly at about mark; scape thick but flagellum black above and yellow beneath); joint yellow spot on tubercle wings clear, nervures of cells greatly contracted basad of transverso-medial, especially the hind legs yellow; anterior femora convex anteriorly; yellow bands, that on the middle; apical plate with green, without m

yellow with a small black
second and third submarginal
and the basal nervure ends
d. The postscutellum has

Coll. Acad. Nat. Sci. Phil.).
naturalist of San Diego, Cal.

flow. Similar to *N. hemp-*
abdomen is broader and
(tire), and the transverso-
tly so in *hemphilli*). The
black stripe seen in *hemp-*

Sci. Phila.). This is so
only a variety; yet it has
nomada, as that group is

tt). In Coll. U. S. Nat.

differs from *edwardsii* by
oader than long); lateral
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ate above, in *edwardsii*);
eath; ventral surface of
ment. The apical plate
yellow spots. From *N.*
ry narrowly yellow, and
ot below middle ocellus;
d antennal joint a little
shorter than scape, etc.
d, and all the tibiae have

In Coll. U. S. Nat.

perba; black and red,
ge bands. Head and

thorax very densely punctured, abundantly clothed with pale ferrugi-
nous hair; face broad; occiput and front (except a red patch below
middle ocellus) black; face up to level of antennæ (except narrow edges
of supraclypeal mark and line half-way down edge of clypeus) red, the
red lateral face-marks continuing above very broadly until a point
about level with end of scape, where they are much narrowed and
notched, thence continuing over eyes, and suddenly broadening to
form a broad postorbital red band; antennæ red, apical half of fla-
gellum dusky above; third joint conspicuously longer than fourth;
upper margin of prothorax, very narrow lateral margins of mesothorax,
scutellum, postscutellum, metathorax except narrow lateral margins
and basal enclosure connecting with a smaller apical triangle, tubercles,
tegulae and nearly all of pleura, all red; legs bright red; basal joint of
hind tarsi long and broad, and slightly dusky; wings reddish, nervures
dark brown, stigma ferruginous; third submarginal cell much con-
tracted above; basal nervure ending very slightly basad of transverso-
medial, the latter very slightly oblique; abdomen ornamented nearly
as in *N. superba*, but the yellow is orange, and the fifth segment is
without black; ventral surface orange with three black bands.

Hab.—"So. Cal.," four in Coll. Acad. Nat. Sci. Phila. A very dis-
tinct and beautiful species.

Nomada (*Holonomada*) *hesperia*, sp. n.

♂.—Length about 10 mm.; black and yellow. Head and thorax
thickly clothed with white hair, very dull above, clear and shining
beneath, dense and silvery over clypeus; eyes pale green, converging
below; basal half of mandibles, labrum, clypeus and broad lateral
face-marks (irregularly notched on inner margin above clypeus, and
ending abruptly at about level of antennæ), all yellow; no supraclypeal
mark; scape thick but not swollen, yellow beneath and black above;
flagellum black above and dull reddish beneath (third antennal joint
yellow beneath); joint 3 slightly longer than 4; thorax black with a
yellow spot on tubercles, but no other yellow; tegulae lemon-yellow;
wings clear, nervures dull ferruginous; second and third submarginal
cells greatly contracted above; basal nervure ending some distance
basad of transverso-medial; legs yellow in front, largely black behind,
especially the hind legs; first joint of anterior and middle tarsi all
yellow; *anterior femora expanded below into a large yellow lamina, which*
is convex anteriorly; abdomen black with five continuous greenish-
yellow bands, that on second segment only moderately narrowed in
the middle; apical plate dark, entire; ventral surface yellow stained
with green, without much black except at base.

on face, cheeks and sides green; inner orbital margin except tips, labrum, clypeus (rapidly narrowing from base) margin at about level of middle of eye beneath eyes extending to base but not excessively so, yellowish dull reddish beneath, black point conspicuously short; punctured, nearly bare; small tubercles, narrow margins between tegulae and scutellum, post-scutellum, two round large subquadrate patches, spot behind tubercles, vertex, tegulae, all lemon-yellow; black behind except at apex of thorax, with a black stripe on whole surface, that on mid lobe running parallel); middle lobe fairly clear, dusky at apex; large; second submarginal vein, the first recurrent nerve considerably larger and longer; narrowed above; basal vein

Sci. Phila. Very distinct. Aside from this, the entirely black mark distinguish it from

cell). This has the second phen, but I cannot separate it. Prov. appears from the not identical.

ings of abdomen black (not creamy-white bands; hind end pale brown; metathorax transverso-medial, or very

Sci. Phila.

black. Head and thorax very black, which is dense on the face, part of mandibles, labrum, supraclypeal mark, lateral on the eyes, lemon-yellow; the between the clypeus and the suddenly narrow, and con- broad band which ends nae; thus the lateral face- outline to the head of a yellow in front and black joints largely black above, al joint triangular, about 5 to 7 or 8 with minute lar patch on anterior part bercles, tegulae, scutellum anterior corner of scutellum, ow; metathorax all black; us; basal nervure almost basad of it; second sub- of first four femora beneath, used patch on hind tibiae prior legs in front (more or

less), middle tibiae at apex, first joint of middle tarsi in front, and hind tibiae at apex, yellow; abdomen closely and minutely punctured, lemon yellow, the segments black at base and more or less ferruginous apically; first segment with the basal half black, the apical half (except the hind margin) ferruginous centrally, with a yellow patch on each side; apical plate ferruginous, notched; venter black at base, otherwise varied with yellow and red.

Var. *a*.—Somewhat smaller; no light spots at anterior corners of scutellum.

Hab.—Pasco, Washington State, May 25, 1896 (*Trevor Kincaid*).

Var. *a*, Los Angeles county, Cal. (*Coquillett*); in U. S. Nat. Museum. The front coxae exhibit a very small spine, showing some affinity to Robertson's genus *Centrias*; but the insect is best referred to *Xanthidium*, near to *N. luteoloides*.

Nomada (*Xanthidium*) *decempunctata*, sp. n.

♂.—Length about 8 mm., rather slender, not very hairy (white hair on face, cheeks and sides of thorax), black and yellow. Eyes pale green; inner orbital margin presenting a double curve; mandibles except tips, labrum, clypeus, supraclypeal mark, lateral face-marks (rapidly narrowing from clypeus and ending in a sharp point on orbital margin at about level of antennae), stripe at top of eyes, and stripe beneath eyes extending half-way up cheeks, all yellow; scape swollen, but not excessively so, yellow in front, black behind; flagellum ordinary, dull reddish beneath, black above, last joint obtuse; third antennal joint conspicuously shorter than fourth; mesothorax extremely densely punctured, nearly bare of pubescence; upper border of prothorax, tubercles, narrow marginal stripe at sides of mesothorax, elongate spot between tegulae and scutellum, scutellum except margins, stripe on postscutellum, two round spots sublaterally on metathoracic enclosure, large subquadrate patches on metathorax, somewhat diamond-shaped spot behind tubercles, very large patch extending across pleura, and tegulae, all lemon-yellow; legs yellow; coxae black behind; hind femora black behind except at apex; anterior and middle femora, and all the tibiae, with a black stripe behind, that on hind tibiae covering nearly the whole surface, that on middle femora double (a broad and narrow stripe running parallel); middle and hind tarsi mostly black behind; wings fairly clear, dusky at apex, nervures and stigma dark brown; stigma large; second submarginal cell very narrow, higher than broad, receiving the first recurrent nervure at its middle; first submarginal cell considerably larger and longer than the other two combined; third greatly narrowed above; basal nervure ending well basad of the transverso-

medial; abdomen dull, not appreciably punctured, but very minutely roughened; apical margins of segments subhyaline brownish, this broader in the middle than at the sides; basal half of first segment black, the other half (except the margin) yellow, but the black sends a straight narrow band into the yellow in the middle line, extending about three-fifths the breadth of the yellow; there is also a sublateral small black spot on the yellow on each side near the hind margin, the same being repeated also on segments 2 to 5, which are similarly ornamented with yellow, except that the black invades it more in the middle line, the yellow on segments 2 to 4 being interrupted in the middle line; on segment 2 the black also sends a short tongue into the yellow at the sides; this description does not well indicate the complicated pattern, but it may be added that if the abdomen is viewed with the apex directed upward, the yellow on segments 2 to 4 has on each side a recognizable resemblance to the head of a bird; apical plate dark brown, deeply bifid; venter yellow, first segment with longitudinal black bands, third and fourth segments black at base; mesosternum with a large yellow patch.

Hab.—"So. Cal.," one in Coll. Acad. Nat. Sci. Phila. A very distinct species.

Nomada (Xanthidium) sanctæcrucis, sp. n.

♂.—Length about 8 mm.; rather slender, black and yellow. Head and thorax with little hair; facial quadrangle about square; mandibles except apex, labrum, clypeus, supra-clypeal mark, lateral face-marks (rather broad, ending obtusely at level of antennæ), and stripe under eye extending about half-way up posterior orbits, all lemon-yellow; the black between the supra-clypeal and lateral marks is broad, and sends a narrow tongue half-way down sides of clypeus; scape moderately swollen, yellow in front, black behind; flagellum long, ferruginous beneath, blackish above, ordinary in structure; third antennal joint about half length of fourth; mesothorax entirely black, coarsely and very densely punctured; upper border of prothorax, tubercles (except black dot), tegulæ, irregular (with a point directed upward and a longer one posteriorly) transverse patch on pleura, and two large spots on scutellum, deep yellow; postscutellum and metathorax entirely black; legs yellow, coxæ mostly black, femora black above except at apex; the first four femora, seen from behind, are longitudinally divided into black and yellow areas, but the hind femora are all black behind except at apex; anterior and middle tibiæ stained with blackish behind, hind tibiæ very dark brown behind except narrow upper border; middle and hind tarsi largely suffused with brown; wings brown-

ish, nervures dark brown; moderately, third greatly a little basad of basal; a band on first segment common on second and third segments but not abruptly constant; fifth segments broad throughout all yellow; apical plates at the bases of the segments yellow mark shaped somewhat like a comma.

Hab.—Santa Cruz Mountains.

Nomada (Xanthidium) sub-

♂.—Length $8\frac{1}{2}$ mm. Head clothed with long erect hairs; scape also hairy. Tegulæ, basal nervure a little yellow; scutellums entirely black with longitudinal ridges; tibiæ yellow with a black stripe behind.

from Cresson's description well developed; flagellum yellow band on first segment important ones, but I believe that the Californian species should rank only as a *subsimilis* is a good description.

Hab.—Los Angeles County, Nat. Museum. Two specimens.

Nomada (Xanthidium) coquimbæ

♂.—Length about 9 mm. with some yellowish at base; brownish-white hair, dense on clypeal area; eyes brown, little narrowed below; beneath eyes, and near antennæ, pale yellow; scutellum black behind; flagellum ordinarily black above; third antennal joint dull and very dense; prothorax, tubercles, flagellum, tegulæ, dull yellow; no-

[Aug.,

ish, nervures dark brown, stigma ferruginous; second submarginal cell moderately, third greatly, narrowed above; transverso-medial nervure a little basad of basal; abdomen banded with black and yellow; yellow band on first segment constricted but not divided in the middle; bands on second and third segments narrower in the middle than at the sides, but not abruptly constricted like that on first; bands on fourth and fifth segments broad throughout, not narrowed in middle; sixth segment all yellow; apical plate dark brown, notched; venter yellow, with the bases of the segments black; first ventral segment dark with a yellow mark shaped something a sheep's skull.

Hab.—Santa Cruz Mts., Cal. (U. S. Nat. Museum).

Nemada (*Xanthidium*) *subsimilis*, sp. n. (*civilis*, subsp.?).

♂.—Length $8\frac{1}{2}$ mm., black and yellow, head and thorax thickly clothed with long erect coarse hair, yellowish-white below, brown above; scape also hairy. Tegulae yellow; nervures and stigma ferruginous; basal nervure a little basad of transverso-medial; metathorax and scutellums entirely black; basal area of metathorax with minute longitudinal ridges; tibiae yellow, each with a black spot behind, femora with a black stripe behind. In all respects very closely related to *N. civilis*, from Cresson's description of which it differs thus: Supraclypeal mark well developed; flagellum mostly black above; anterior margin of yellow band on first segment straight. These characters are not very important ones, but I have *N. civilis* from Colorado, and am confident that the Californian species is distinct, though it may prove that it should rank only as a subspecies. The dark hair on the thorax of *subsimilis* is a good distinguishing character.

Hab.—Los Angeles county, Cal., February (*Coquillett*). In U. S. Nat. Museum. Two specimens.

Nemada (*Xanthidium*) *coquilletti*, sp. n.

♂.—Length about 9 mm., rather slender, black and yellow, legs red with some yellowish and black. Head and thorax with abundant brownish-white hair, dense and silvery on middle of clypeus and supraclypeal area; eyes brownish-gray; facial quadrangle nearly square, a little narrowed below; basal part of mandibles, labrum, clypeus, stripe beneath eyes, and narrow lateral face-marks extending to level of antennae, pale yellow; scape swollen, hairy, yellow in front and black behind; flagellum ordinary, bright ferruginous, the three basal joints black above; third antennal joint conspicuously shorter than fourth; thorax dull and very densely punctured, a stripe on upper margin of prothorax, tubercles, flame-like mark (very not large) on pleura, and tegulae, dull yellow; no yellow on metathorax or scutellums; legs pale

red, knees and anterior femora in front pale yellow; anterior femora with a black spot at base behind, the other femora largely black behind; wings tinged brownish, stigma dark red; second submarginal cell triangular, very broad below, greatly narrowed above, third submarginal cell narrowed about half above; basal nervure ending distinctly basad of transverso-medial; abdomen with yellow bands; bases of the segments black, apical margins of the first four broadly ferruginous; on the third and fourth segments laterally are obscurely indicated lateral spots next to the ferruginous; yellow on first segment abruptly cut in the middle by black, that on the second segment greatly narrowed by a ferruginous backwardly projecting tongue; apical plate slightly notched; venter red (even to base) speckled with yellow, the yellow forming a curious pattern on the third segment.

Hab.—Santa Clara county, Cal. (*Coquillett*). In U. S. Nat. Museum. It is a little uncertain whether this is a *Xanthidium* or a *Nomada* s. str. It resembles *N. modocorum*, Ckll., from Oregon, but is easily distinguished by its much narrower, more parallel-sided abdomen, and the second submarginal cell as described.

Nomada (Xanthidium) ashmeadi, sp. n.

♀.—Length 10 mm.; black and yellow, not very hairy. Eyes sage-green; face a little broader than long; basal half of mandibles, labrum, clypeus, supraclypeal mark (more than twice as broad as long), lateral face-marks, wedge-shaped mark at top of eyes, and narrow posterior orbits almost up to wedge-shaped mark, all deep yellow; lateral face-marks very broad, their upper margin extending from upper lateral corner of supraclypeal mark obliquely upward (touching antennal socket) to a narrow truncation on the orbital margin about half-way between level of antennæ and top of eye; a fine black line passes down side of supraclypeal mark and upper half of clypeus, ending in a black circle looking like a minute ocellus; antennæ stout; scape not swollen, yellow suffused with red in front, black behind; flagellum deep red, first segment with a black basal spot above, last blackish above; third antennal joint about three-quarters length of fourth; thorax coarsely and very densely punctured; upper border of prothorax, tubercles (which are conical-protuberant), tegulæ (except an orange-red spot), almost whole pleura, spot before each anterior corner of scutellum, two large patches on scutellum joined posteriorly, postscutellum, two round spots on metathoracic enclosure, two large patches and lateral spots on metathorax, all deep yellow; legs yellow; coxæ mostly black behind; first four femora with a black stripe behind; hind femora black behind except narrow border and broad apex; tibiæ striped with black

behind; basal joint of hind small joints of tarsi more smoky, nervures fuscous, stigma quadrate, receiving the recurrent meeting transverso-medial; roughened; basal half of first and broad bases of second and second segment, and a reverse

Hab.—Los Angeles county. Named after the well-known spots on the metathoracic enclosure is smaller and has a different

Nomada (Phor) subgracilis, sp. n.

♂.—Length about 5 mm.; white hair; eyes gray; mandible anterior margin of clypeus, and to a very fine point somewhat scape rather stout, dark red pale ferruginous beneath, black basal joints projecting above over half length of fourth; the but no other light markings; brown, the first four yellow in dish; marginal cell long; second and receiving the recurrent meeting some distance basad of the punctate, dark brown; first spots each side, and an obscure spot with more or less interrupted yellow laterally, but narrow at the middle; on the third to fifth sublaterally by large dark brown yellow entire band failing later distinct rim; venter brown.

Hab.—"Cala.," one in Coll. me it was confused with *N. grisea* in the collection.

The remaining species are not understood by Robertson. from California.

low; anterior femora largely black behind; submarginal cell triangular, third submarginal cell ending distinctly in bands; bases of the broadly ferruginous; obscurely indicated first segment abruptly segment greatly narrowed; tongue; apical plate edged with yellow, the rest.

U. S. Nat. Museum.
For a *Nomada* s. str.
but is easily distinguished by the abdomen, and the

hairy. Eyes sage-colored (as long), lateral and narrow posterior clypeus; lateral face from upper lateral touching antennal joint about half-way; black line passes down ending in a black spot; scape not swollen, flagellum deep red, dusky above; third segment; thorax coarsely punctured (thorax, tubercles orange-red spot), anterior of scutellum, postscutellum, two patches and lateral coxae mostly black; hind femora black striped with black

behind; basal joint of hind tarsi with a suffused black stripe behind; small joints of tarsi more or less reddish; wings strongly yellowish-smoky, nervures fuscous, stigma ferruginous; second submarginal cell quadrate, receiving the recurrent nervure at its middle; basal nervure meeting transverso-medial; abdomen rather broad, yellow, minutely roughened; basal half of first segment (a little produced in middle line), and broad bases of second and third segments, jet black; venter yellow, second segment, and a reversed V on first, black.

Hab.—Los Angeles county, Cal. (*Coquillett*). In U. S. Nat. Museum. Named after the well-known hymenopterist of that institution. The spots on the metathoracic enclosure suggest *N. decempunctata*, but that is smaller and has a different venation.

Nomada (*Phor*) *subgracilis*, sp. n.

♂.—Length about 5 mm.; head and thorax densely punctured, with white hair; eyes gray; mandibles except tips, labrum, rather broad anterior margin of clypeus, and triangular lateral face-marks (coming to a very fine point somewhat below level of antennæ), all pale yellow; scape rather stout, dark reddish-brown, roughened, hairy; flagellum pale ferruginous beneath, black or nearly so above, apical margins of basal joints projecting above; third antennal joint about or slightly over half length of fourth; thorax black with a pallid spot on tubercles, but no other light markings; tegulæ dark red, punctured; legs dark brown, the first four yellow in front; wings dusky at apex, stigma reddish; marginal cell long; second submarginal little narrowed above, and receiving the recurrent nervure at its middle; basal nervure ending some distance basad of transverso-medial; abdomen finely rugoso-punctate, dark brown; first segment with an oblique pallid stripe on each side, and an obscure spot mesad of each; second to fifth segments with more or less interrupted bands, which are broadened and pale yellow laterally, but narrow and become suffused with reddish toward the middle; on the third to fifth segments these bands are interrupted sublaterally by large dark brown spots; sixth segment with a pale yellow entire band failing laterally; apical plate large, entire, with a distinct rim; venter brown.

Hab.—"Cala.," one in Coll. Acad. Nat. Sci. Phila. Mr. Viereck tells me it was confused with *N. gracilis* (from which it differs in venation) in the collection.

The remaining species are referred to the restricted genus *Nomada*, as understood by Robertson. I have not seen any species of *Gnathias* from California.

Nomada rubrica, Provancher, var. *n.*

♀.—A black stripe connecting the ocelli; hind femora with a black stripe behind. Wings strongly yellowish-smoky, basal nervure meeting transverso-medial, but rather on the basad side. Third antennal joint shorter than fourth. From *N. grayi*, Ckll., it is easily known by the venation, and absence of black on the cheeks.

Hab.—Los Angeles county, Cal. (Coquillett). In U. S. Nat. Museum.

Nomada subangusta, sp. n.

♂.—Length about 8 mm.; black, ferruginous and yellow; head and thorax with rather copious hair, dull brownish above, white below. Basal two-thirds of mandibles, labrum, clypeus, and lower corners of face, sending a line ending very sharply about half-way up orbital margin, all yellow; a narrow yellow stripe on lower third of posterior orbits; scape yellow (suffused with red basally) in front and sides, black behind; flagellum orange-ferruginous, more or less blackened above, especially the basal half; third antennal joint conspicuously shorter than fourth; thorax densely punctured, black, tubercles pallid, but no other pale markings; tegulae ferruginous, hairy and punctured; legs ferruginous; anterior femora suffused with yellowish in front, and with a black stripe behind; middle femora black beneath except at apex; hind femora black behind and beneath except at apex, but the margins of the black suffused; anterior and middle tibiae with a suffused blackish spot; wings clear, dusky on apical margin, nervures fuscous, stigma ferruginous; second submarginal cell narrow, higher than long; basal nervure ending just basad of transverso-medial; abdomen with the basal half of first segment, and the bases of following segments more or less (but edged with ferruginous) black; apical margins of the segments very broadly ferruginous; bands pale yellow, that on first segment abruptly interrupted; that on second gradually narrowed to middle but not quite interrupted; apical plate rather long and narrow, deeply notched; shape of first segment long and narrow; venter ferruginous variegated with pale yellow.

Hab.—"So. Cal.," one from the W. J. Fox collection (U. S. Nat. Museum). Close to *N. modocorum*, Ckll., with which it nearly agrees in markings, color and pubescence; but it is a much narrower insect, especially in the first abdominal segment, than *modocorum*. It differs in the same manner from *N. ruficornis*, L., which it also much resembles. By the narrow first abdominal segment, and other characters, it resembles *N. cordleyi*, Ckll., but the latter has a much longer flagellum, and the abdomen is narrower in the middle.

Nomada erythræa, Dalla Torre

♀.—Closely allied to simple; stigma orange-out markings; second, excessively smaller pallid hind tarsi with dark basad of the transverso-

Hab.—San Bernardino Museum.

Nomada rhodosoma, sp. n.

♀.—Length 7 mm. smaller, and the third fourth (in *erythræa* it is the ocelli, and a black Basal nervure ending ferruginous. Hind tibiae is not the case in *erythræa*

Hab.—Santa Cruz Mts (four from Santa Cruz assigned here; they may

Nomada californiæ, sp. n.

♀.—Length about 7½ distinguished by the character, broad, and the upper part clothed with dark hairs, white. Ocelli on a black metathorax with a black scutellum with a decided tennæ entirely red; third dusky, not very dark at are ending a short distance no black marks except a blackish stripe behind.

Hab.—"So. Cal.," one Oregon species this is related Ckll. From *astori* it is on antennal joint and the abdominal segment. From brighter color, the much hind femora not black be

Nomada erythræa, Dalla Torre.

♀.—Closely allied to *N. ultima*, Ckll.; mandibles and anterior coxæ simple; stigma orange-brown; mesothorax and metathorax red without markings; second, third and fourth abdominal segments with successively smaller pallid lateral spots, easily overlooked; basal joint of hind tarsi with dark hair on inner side. The basal nervure ends just basad of the transverso-medial.

Hab.—San Bernardino county, Cal., May. One in U. S. Nat. Museum.

Nomada rhodosoma, sp. n.

♀.—Length 7 mm. Almost exactly like *N. erythræa*, but a little smaller, and the third antennal joint almost or quite as long as the fourth (in *erythræa* it is not over half as long). There is black between the ocelli, and a black stain in the middle of the metathoracic enclosure. Basal nervure ending scarcely basad of transverso-medial. Stigma ferruginous. Hind tibiae strongly tuberculate on the outer edge, which is not the case in *erythræa*.

Hab.—Santa Cruz Mts., Cal., two in U. S. Nat. Museum. Six males (four from Santa Cruz Mts., two from "Cala.") are provisionally assigned here; they may not all belong to one species.

Nomada californiæ, sp. n.

♀.—Length about $7\frac{1}{2}$ mm.; also similar to *erythræa*, but easily distinguished by the characters given in the table. The head is very broad, and the upper parts of the head and thorax are conspicuously clothed with dark hairs, while the hair on the sides and under parts is white. Ocelli on a black patch; mesothorax with a blackish band; metathorax with a blackish band, becoming faint anteriorly; post-scutellum with a decided yellow tint; abdomen without black; antennæ entirely red; third joint almost as long as fourth; wings rather dusky, not very dark at apex; stigma orange-ferruginous; basal nervure ending a short distance basad of transverso-medial; legs red with no black marks except on coxæ; the hind femora have a very faint blackish stripe behind.

Hab.—"So. Cal.," one in Coll. Acad. Nat. Sci. Phila. Among the Oregon species this is related to *N. astori*, Ckll., and *N. corvallisensis*, Ckll. From *astori* it is easily distinguished by the much shorter fourth antennal joint and the absence of black marks at sides of first abdominal segment. From *corvallisensis* it is known by its lighter, brighter color, the much smaller punctures of mesothorax, and the hind femora not black behind.

Nomada ultimella, sp. n.

♀.—Length about $6\frac{1}{2}$ mm.; another red species similar to *N. erythraea*, but distinguished by the characters given in the table. It is also near to *N. ultima*, Ckll., but easily separated by its smaller size, lighter color, with less black marking, and less prominent scutellum. Lower corners of face yellow; ocelli on a black patch; thorax without distinct bands, but the mesothorax and metathorax have barely indicated blackish median bands; sides of first abdominal segment with faint blackish stripes; second and third segments with small lateral yellow spots; stigma orange-fulvous; second and third submarginal cells both very greatly narrowed above; basal nervure ending a little basad of transverso-medial; third antennal joint a little shorter than fourth.

Hab.—"So. Cal.," one in Coll. Acad. Nat. Sciences Phila.

Nomada latifrons, sp. n.

♀.—Length about 9 mm.; a red species similar to *N. erythraea*. Head transversely oval, face very broad, especially above; ocelli on a black patch which extends considerably laterad of them; a similar transverse black patch on front, joining ocellar patch by two bands; cheeks black except the broadly red orbital margin; mesothorax and metathorax each with a single black band; abdomen with a blackish dorsal suffusion on segment 3, and a slight stain on 4 and 5, but no other black, nor any yellow spots; legs red, coxae largely black behind; hind femora with about half the posterior surface black; third antennal joint a little shorter than fourth; wings strongly yellowish-smoky; stigma dark ferruginous; third submarginal cell greatly narrowed above; basal nervure ending a short distance basad of transverso-medial; abdomen of the long and comparatively narrow type.

Hab.—Santa Cruz Mts., Cal.; two in U. S. Nat. Museum. Differs from *N. erythrochroa*, Ckll. by the black markings, the finely roughened (not distinctly punctured) abdomen, and the much broader face; from *N. corvallisensis*, Ckll., by the very much broader face and much less coarsely sculptured mesothorax; from *N. clarkii*, Ckll., by its shorter head in proportion to its breadth, much narrower abdomen and different venation.

Nomada tintinnabulum, sp. n.

♀.—Length about $6\frac{1}{2}$ mm.; a red species similar to *N. erythraea*. Eyes pale gray; facial quadrangle a little longer than broad; extreme lower corners of face yellowish; face red entirely without marks; a rather prominent keel between antennae; ocelli on a small black patch; cheeks all red; antennae entirely red, third joint a trifle shorter than fourth; dorsum of thorax without hair; mesothorax and metathorax

with a median the coxae all a basal nervure abdomen red w less golden; fir pygidium narro

Hab.—Santa *N. corvallisensis* sculptured mes spots on sides o maculate face a shaped mark.

Nomada atrofrons

♀.—Length a hairy (hair on se greenish-gray; f narrowed below from antennae up (broadly except red, except the s others; flagellum little longer than tured, with a b median black b thorax (except t wings and middle wings smoky, sti quadrate, nearly point above; bas transverse medial obscure yellow sp a pair on dorsum o blackish suffusion.

Hab.—"So. Cal to *N. ultima*, Ckll. of the third and different.

Nomada excellens, sp.

♀.—Length abo and thorax quite h of the sides and

er to *N. ery-*
table. It is
smaller size,
at scutellum.
rath without
barely indi-
segment with
lateral yel-
marginal cells
a little basad
than fourth.

with a median blackish band; legs red without black markings, even the coxæ all red; wings yellowish-smoky; stigma dull ferruginous; basal nervure ending a short distance basad of transverso-medial; abdomen red without yellow spots, hind margins of segments more or less golden; first segment with a median black bell-shaped mark; pygidium narrowly rounded at end.

Hab.—Santa Cruz Mts., Cal., one in U.S. Nat. Museum. Differs from *N. corallensis* by its lighter color and narrower and much more finely sculptured mesothorax; from *N. oregonica* by the absence of yellow spots on sides of second abdominal segment, the venation and the immaculate face and pleura. The name *tintinnabulum* refers to the bell-shaped mark.

Nomada atrofrenata, sp. n.

N. erythraa,
; ocelli on a
n; a similar
two bands;
othorax and
h a blackish
but no other
behind; hind
rd antennal
wish-smoky;
y narrowed
transverso-
type.

♀.—Length about 8 mm.; rather dark red, marked with black, little hairy (hair on scutellum dark, on sides of metathorax white); eyes pale greenish-gray; facial quadrangle a little broader than long, scarcely narrowed below; extreme lower corners of face yellowish; front black from antennæ upward, and over to cheeks, leaving the orbital margins (broadly except at top of eyes, where narrowed to a line) red; antennæ red, except the small second joint, which is dark, contrasting with the others; flagellum suffused with bluish-gray; third antennal joint a very little longer than fourth; mesothorax very densely and minutely punctured, with a broad median black band; scutellum with a narrow median black band; metathorax with a broad band; sides of prothorax (except tubercles, which are yellowish) black; area between wings and middle and hind coxæ black; legs red, coxæ with much black; wings smoky, stigma dull ferruginous; second submarginal cell large, quadrate, nearly square, parallel-sided; third narrowed almost to a point above; basal nervure ending a considerable distance basad of transverse medial; abdomen rather broad, shining, convex, red with obscure yellow spots on sides of third, fourth and fifth segments, and a pair on dorsum of fifth; third and fourth segments with some median blackish suffusion; first segment with a broad black band on each side.

Hab.—"So. Cal.," one in Coll. Acad. Nat. Sciences Phila. Allied to *N. ultima*, Ckll., but the head is not so broad, and the proportions of the third and fourth antennal joints, and the venation, are very different.

Nomada excellens, sp. n.

N. erythraa,
ad; extreme
at marks; a
black patch;
shorter than
metathorax

♀.—Length about 11 mm.; robust, red marked with black. Head and thorax quite hairy, the hair of the dorsal parts pale brownish, that of the sides and under parts dull white; eyes pale yellowish-green;

head broad, facial quadrangle considerably narrowed below; front and cheeks marked with black as in *N. atrofrenata*, except that the red orbital margin is not narrowed quite to a line at top of eyes, there is a dull red spot before anterior ocellus, and a black line runs down from each antenna to middle of side of clypeus; antennæ entirely red (including second joint), *third joint conspicuously longer than fourth*; mesothorax with three black stripes, the middle one much the broadest; scutellum prominent, it and the postscutellum red; metathorax black with a large red spot on each side; prothorax black or blackish except upper border and tubercles; pleura red; legs red, only the coxæ marked with black; basal joint of hind tarsi broad, the short hair on the inner side shining pale golden; wings moderately smoky, nervures fuscous; stigma quite small, ferruginous; second submarginal cell rather strongly contracted above, *receiving the recurrent nervure far beyond its middle*; third submarginal cell very narrow, of the same breadth above as the second; basal nervure ending a moderate distance basad of transverso-medial; abdomen impunctate but minutely roughened, very broad, red, with a blackish stain on middle of second segment; no yellow spots; first segment with lateral cuneiform black marks, the points directed latero-posteriorly, and two smaller oblique marks in the dorsal region between them, all being near the base of the segment.

Hab.—"So. Cal.," one in Coll. Acad. Nat. Sciences Phila. Something like *N. clarkii*, but a very distinct species, not quite falling in *Nomada* s. str., as defined by Robertson.

Nomada angelarum, sp. n.

♀.—Length about $8\frac{1}{2}$ mm., dark red with black markings, abdomen chestnut-red with a purplish luster, hind margins of segments broadly coppery-red. Hair of scutellum, mesothorax and vertex fuscous; of sides of metathorax, hind coxæ, pleura, cheeks and face rather abundant, white; eyes gray; face a little narrowed below; upper part of clypeus, supraclypeal region, front, vertex, occiput and cheeks black, except that the orbital margins are broadly red, the red sending a pointed projection into the black on vertex; antennæ long, red, first three joints more or less black behind; scape with dark hairs; face with some dark hairs amongst the white; third antennal joint conspicuously shorter than fourth; thorax densely rugoso-punctate; mesothorax with three black bands of nearly equal breadth; metathorax black, with an extremely obscure reddish spot on each side, and a pair of well-defined large round red spots on the enclosure; nearly all of pleura and tubercles red, but sides of thorax otherwise black; legs red; coxæ largely black; middle femora black beneath at extreme base; hind

femora strongly striped behind; hind femora strongly striped behind; spurs yellow on apical margin; middle femora much broader above than below; distance basad of first segment with black of the black nearly second to fourth; second largest, close to fifth segments with spots in all on fore cream-colored markings.

Hab.—Los Angeles Museum. Allied to abdominal spots, absence of a red spot.

Nomada davidsoni, sp. n.

♀.—Length 9 mm. abundant white hair quadrangle not far from mandibles, labrum, (conspicuous) lateral face yellow; scape black ruginous beneath; reddish with a yellow part; scutellum dark a small orange spot scutellum red in middle tegulae ferruginous; before each middle coxa less black beneath, in anterior tibiae with a black subapical spot or less distinct cream without; wings moderately brown border; second nervure meeting transverse moderately broad, marked markings; basal segments are pairs of

wed below; front and except that the red top of eyes, there is a line runs down from inner entirely red (inner than fourth; meso- much the broadest; metathorax black or blackish except only the coxæ marked short hair on the inner y, nervures fuscous; marginal cell rather nervure far beyond of the same breadth erate distance basad minutely roughened, of second segment; arm black marks, the oblique marks in base of the segment. nees Phila. Some- not quite falling in

markings, abdomen of segments broadly vertex fuscous; of face rather abundant; upper part of and cheeks black, the red sending a line long, red, first dark hairs; face with joint conspicuously; mesothorax with thorax black, with and a pair of well-ly all of pleura and black; legs red; coxæ extreme base; hind

femora strongly suffused with black behind; middle tibiae with a black stripe behind; hind tibiae and tarsi strongly suffused with plumbeous behind; spurs yellowish-white; wings fairly clear, strongly darkened on apical margin; stigma dark ferruginous; second submarginal cell much broader above than third; basal nervure ending a considerable distance basad of transverso-medial; abdomen only moderately broad; first segment with the basal two-fifths (at least) black, the hind margin of the black nearly straight, though more or less crenulated; sides of second to fourth segments with small cream-colored spots, that on second largest, elongated in an antero-posterior direction; fourth and fifth segments with small sublateral cream-colored spots (thus four spots in all on fourth); venter red, second to fourth segments with cream-colored marks, second with a large black blotch.

Hab.—Los Angeles county, Cal. (*Coquillett*). One in U. S. Nat. Museum. Allied to *N. oregonica*, Ckll., but differs by the numerous abdominal spots, the purplish-coppery colors of abdomen, and the absence of a red spot before middle ocellus.

Nomada davidsoni, sp. n.

♀.—Length 9 mm.; face, cheeks and sides of thorax with rather abundant white hair; head and thorax rugose, black; eyes gray; facial quadrangle not far from square, but narrowed below; basal half of mandibles, labrum, broad anterior margin of clypeus, and linear (inconspicuous) lateral face-marks reaching about to level of antennæ, dull yellow; scape black, very hairy; flagellum blackish above and ferruginous beneath; third antennal joint shorter than fourth; tubercles reddish with a yellow spot; pleura with an angular red mark on lower part; scutellum dark red, suffused with black in middle posteriorly; a small orange spot before each anterior corner of scutellum; post-scutellum red in middle and yellow at sides; metathorax all black; tegulae ferruginous; a reddish patch, becoming yellow posteriorly, before each middle coxa; legs red; anterior and middle femora more or less black beneath, hind femora black behind except at extreme apex; anterior tibiae with a black stripe on outer side; hind tibiae with a large black subapical spot on each side; knees and apices of tibiae with more or less distinct cream-colored spots; hind tarsi strongly blackened without; wings moderately dusky, stigma dull ferruginous with a dark brown border; second submarginal cell little narrowed above; basal nervure meeting transverso-medial on the basad side; abdomen only moderately broad, minutely roughened, pale red with large cream-colored markings; basal half of first segment black; on the first three segments are pairs of large cream-colored triangles pointing mesad, the

first two pairs having a red spot on or near the hind margin, the third (on third segment) almost divided into two by an anterior intrusion of the red; fourth and fifth segments with broad cream-colored bands, deeply notched at the sides anteriorly, the notches rounded; venter red, with six rib-shaped (curved) whitish marks.

Hab.—"So. Cal.," one in Coll. Acad. Nat. Sciences Phila. Named after Dr. A. Davidson, who has discovered many Californian bees. The general appearance of the insect recalls *N. articulata*, Sm., while the details of the markings on thorax and abdomen remind one of *N. decempunctata*, Ckll.

Nomada subvicinialis, sp. n.

♂.—Length about $8\frac{1}{2}$ mm.; pubescence of head and thorax quite abundant, brown dorsally, white on face, sides and under parts; head and thorax black, rugoso-punctate; facial quadrangle nearly square; mandibles (except tips), labrum, clypeus, lateral face-marks and narrow stripe extending half-way up posterior orbits, lemon-yellow; lateral face-marks extending as rather narrow bands up anterior orbits as far as level of antennæ, where they end abruptly, slightly bending inward; scape rather stout, yellow in front, black behind; flagellum long, bright ferruginous, with a black streak above on basal joints; third antennal joint much shorter than fourth; upper border of prothorax, tubercles, and a mark on lower anterior part of pleura, yellow; scutellum with two small and obscure red spots; thorax otherwise wholly black; legs bright red; hind coxæ black behind except at apex; middle and hind femora with a black spot beneath at base; tegulæ ferruginous; wings quite long, clear, dusky at apex; nervures fuscous; stigma rather small, dull ferruginous; second submarginal cell subtriangular, much narrowed above; basal nervure ending some distance basad of transverso-medial; abdomen minutely roughened, bright orange-ferruginous apex pointed rather acutely; extreme base of first segment with a small black patch emitting three short prongs; sides of second and third segments with a large rounded yellow spot, not at all pointed mesad; fourth segment with small lateral spots, sixth obscurely yellow; apical plate narrow, strongly notched; venter pale ferruginous marked with yellow, the yellow on second segment forming a large patch.

Hab.—"So. Cal.," one in U. S. Nat. Museum. Related to *N. vicinialis* Cresson.

Nomada marginella, sp. n.

♀.—Length about $7\frac{1}{2}$ mm.; head and thorax black, rugoso-punctate, with white pubescence, rather abundant on face, cheeks, pleura, sides

of metathorax, a square, but broad broad upper margin and extreme low orbital margin with reddish; seen from below, tegulæ ferruginous before each antenna middle, yellow with yellow marks; second ferruginous, coxae with a black mark the basal and upper surface of posterior mark at base and side of it; apical dusky at apex; second submarginal narrowed above; slightly on the base first segment with projection backward two oblique small pyriform (pointed) marks so deeply on third, broad slightly divided in mark on fifth; base the light mark, blackish, and with

Hab.—"So. Cal.

Nomada oregonica, Ck.

Hab.—"So. Cal.

Nomada bifurcata, sp.

♂.—Length about long hair, the dors nearly square; in face-marks pale y

hind margin, the third
by an anterior intrusion
of cream-colored bands,
notches rounded; venter
black.

Acad. Nat. Sciences Phila. Named
after Californian bees. The
female, *Scutellata*, Sm., while the
male remind one of *N.*

head and thorax quite
black and under parts; head
quadrangle nearly square;
face-marks and nar-
row, lemon-yellow; lat-
eral up anterior orbits
slightly bending in-
ward; hind; flagellum long,
basal joints; third
border of prothorax.
Pleura, yellow; scutel-
lax otherwise wholly
black at apex; middle
tegulae ferruginous;
stigma rather
subtriangular, much
paler basad of trans-
verse orange-ferruginous
mark on first segment with a
black line of second and
third not at all pointed
black obscurely yellow;
ferruginous marked
with a large patch.

Related to *N.*

rugoso-punctate,
black, pleura, sides

of metathorax, and middle and hind coxae; facial quadrangle nearly square, but broader above than long; mandibles except tips, rather broad upper margin of labrum, rather broad anterior margin of clypeus, and extreme lower corners of face sending a just visible line along orbital margin up to level of antennae, all yellow more or less tinted with reddish; scape black; flagellum dark ferruginous, becoming blackish above on basal two-fifths; third antennal joint shorter than fourth seen from below, but a trifle the longer seen from above; tubercles and tegulae ferruginous; a very small but very distinct dull yellow spot before each anterior corner of scutellum; postscutellum reddish in middle, yellow at sides; upper border of prothorax with two small yellow marks; scutellum, metathorax and pleura entirely black; legs ferruginous, coxae and trochanters nearly all black; anterior femora with a black mark beneath at base; middle and posterior femora with the basal and upper parts largely black or blackish; most of the hind surface of posterior femora black; hind tibiae with a yellowish-white mark at base and one at apex, the later with a blackish cloud on each side of it; apical pointed process of hind tibiae unusually long; wings dusky at apex; stigma reddish-brown with a dark-brown margin; second submarginal cell quadrate, little narrowed above; third much narrowed above; basal nervure ending opposite transverso-medial, slightly on the basal side; abdomen rather narrow, pale ferruginous; first segment with basal half black, the black sending a pointed projection backward in the middle line; cream-colored marks as follows, two oblique small marks on the red of first segment, large lateral pyriform (pointed mesad) marks notched posteriorly on second, similar marks so deeply notched anteriorly as to be almost divided into two on third, broad band on fourth deeply notched laterally and very slightly divided in middle line, transversely placed hour-glass-shaped mark on fifth; base of fourth segment and practically all of fifth except the light mark, black; venter ferruginous more or less suffused with blackish, and with four crescentic cream-colored marks.

Hab.—"So. Cal.," one in Coll. Acad. Nat. Sciences Phila.

Nomada oregonica, Ckll.

Hab.—"So. Cal.," one ♂ in Coll. Acad. Nat. Sciences Phila.

Nomada bifurcata, sp. n.

♂.—Length about 6 mm.; head and thorax black, with abundant long hair, the dorsal hairs brownish, the others white; facial quadrangle nearly square; mandibles except tips, labrum, clypeus and lateral face-marks pale yellow; lateral face-marks broad below, rapidly nar-

rowing to a line which ends at level of antennæ; the face-markings are almost as in *N. sayi*, Rob., but the face is not so densely covered with hair as in that species; scape hairy, black, with a red spot at base in front; flagellum long, rather crenulated, dull reddish-brown beneath, blackish above; third antennal joint hardly more than half length of fourth, which is unusually long; thorax all black, except an obscure reddish spot on tubercles; tegulæ shining pale testaceous; legs yellowish-red, basal parts and femora beneath blackened; first four tibiæ with a blackish stripe on the outer side, the stripe on hind tibiæ is more obscure; hair on inner side of basal joint of hind tarsi very pale yellowish; wings quite long, nearly clear, slightly dusky at apex; stigma dull reddish-brown; second submarginal cell square, not in the least narrowed above; third narrowed almost to a point above; basal nervure ending a short distance basad of transverso-medial; abdomen rather narrow, shining yellowish-ferruginous; basal two-thirds of first segment black; second segment blackish basally at sides; second, third and fourth segments with yellow lateral spots, easily overlooked because of the yellowish-red of the abdomen; sixth segment with a very obscure short yellowish band; apical plate strongly bifurcated at end, with two sharp points; venter pale red without markings, the first segment mainly black.

Hab.—"So. Cal.," one in Coll. Acad. Nat. Sciences Phila. Allied to *N. sayi*, Rob.

Nomada elegantula, sp. n.

♀.—Length about 6 mm.; head and thorax black, moderately hairy; facial quadrangle nearly square, a little narrowed below; labrum dark; mandibles, narrow anterior margin of clypeus, and extremely narrow stripe on anterior orbits nearly up to level of antennæ, pale ferruginous suffused with yellow; scape black with a large red basal batch in front; flagellum ferruginous beneath, dark brown above, except first (third antennal) joint, which is red, with the margin prominent; third antennal joint a trifle longer than fourth; thorax black without light marks except the reddish tubercles; legs red; anterior and middle femora with a black stripe above and beneath; anterior and middle tibiæ blackish behind; hind legs black or nearly so, femora beneath at apex, and tarsi beneath in middle, red; wings rather long, nearly clear, apex dusky; stigma practically black; second submarginal cell square, not narrowed above; transverso-medial nervure a little basad of end of basal; abdomen narrow, bright coppery-red; base and sides of first segment, spots on extreme lateral margins of second and third (followed

by yellowish margins, and apex of fifth six pale mar
Hab.—Los
Nat. Museum
by Coquillett
Nat. Science
this cannot b

[Aug.,

1903.]

NATURAL SCIENCES OF PHILADELPHIA.

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the face-markings are
densely covered with
red spot at base in
ish-brown beneath,
than half length of
except an obscure
aceous; legs yellow-
ed; first four tibiae
on hind tibiae is more
tarsi very pale yel-
ky at apex; stigma
re, not in the least
above; basal nerv-
e-medial; abdomen
two-thirds of first
sides; second, third
sly overlooked be-
gment with a very
bifurcated at end,
markings, the first

by yellowish marks), fourth segment except anterior and posterior margins, and fifth except two rather obscure yellowish spots, all black; apex of fifth with a short fringe of silvery-white hair; venter dark with six pale marks.

Hab.—Los Angeles county, Cal., bearing number 397, one in U. S. Nat. Museum, marked "through C. V. Riley," presumably collected by Coquillett. Three others, marked "So. Cal.," are in Coll. Acad. Nat. Sciences Phila. The venation and other characters show that this cannot be the ♀ of *N. bifurcata*.

ices Phila. Allied

moderately hairy;
low; labrum dark;
extremely narrow
pale ferruginous
sal batch in front;
except first (third
ninent; third an-
ek without light
and middle fem-
and middle tibiae
beneath at apex,
nearly clear, apex
cell square, not
basal of end of
and sides of first
and third (followed